

Division HOPLOCARIDA.—Carapace leaving at least four of the thoracic somites distinct. Two movable segments are separated from the anterior part of the head, bearing respectively the pedunculate eyes and the antennules. Antennal peduncle of two segments. Mandibles without lacinia mobilis. Posterior thoracic limbs with protopodite of three segments. (The relation of the segments of the anterior thoracic limbs to those of the limbs in the other divisions is doubtful.) An appendix interna on pleopods. Hepatic cæca much ramified. Heart much elongated, extending through abdominal and thoracic regions. Spermatozoa spherical. Development with metamorphosis. No free-swimming nauplius-stage.

BIBLIOGRAPHICAL NOTICES.

Memoirs of the Geological Survey of the United Kingdom.—The Cretaceous Rocks of Britain. Vol. II. *The Lower and Middle Chalk of England.* By A. J. JUKES-BROWNE, B.A., F.G.S. With Contributions by WILLIAM HILL, F.G.S. 8vo. Pages xiii and 568. With 93 Illustrations, including one Geological Map, two Plates from photographs, and four from micrographs. E. Stanford, London; J. Menzies, Edinburgh; and Hodges & Co., Dublin. 1903.

IN the first volume of this series A. J. Jukes-Browne and W. Hill, with others, described the Gault and Upper Greensand of England. This second volume, by the same authors, together with many contributors, deals with the Lower and Middle Chalk. The third volume will include the description of the Upper Chalk, with chapters on the economies of the soil, stone, &c., on the water-supply, and the physical features of chalk districts, also a complete catalogue of the fossils found in all the different divisions of the Chalk. The present volume begins with a general and chronological account of the researches that led to the definition of the several stratal divisions of the Chalk; and in the sequel the zones or horizons marked out by the occurrence of particular fossils are carefully explained. This part of the book seems to have been written before the valuable results of the researches by Rowe and Sherborn were published; these and their subsequent work along the cliff-sections of the Chalk will have greatly helped geologists in the study of the strata and zones, and are largely utilized in the chapters on the Middle Chalk.

The Lower Chalk ("Cenomanian" in part) includes all the beds

of marls and chalk between the Gault or Upper Greensand and the Melbourn Rock, namely, the so-called "Chloritic Marl" (and the "Cambridge Greensand"), the "Chalk Marl" (with the "Totternhoe Stone" in some districts), and the "Grey Chalk." These are subsequently described as to their characters, range, and fossils, according to the several counties and the northern parts of France.

The Middle Chalk (or Turonian Stage) is defined as consisting of zones marked by the occurrence of certain fossils, such as

3. Zone of *Holaster planus*, including the *Chalk Rock*.
2. Zone of *Terebratulina gracilis*.
1. Zone of *Rhynchonella Cuvieri*, or *Inoceramus mytiloides*, with the *Melbourn Rock* at its base.

These successive divisions are described as distributed in the several counties and in the North of France.

Throughout the long series of Memoirs published by the Geological Survey of Great Britain and Ireland, descriptive of the districts already surveyed, there are frequent allusions to the economic materials procured from the land, and to the relative conditions of the soil and subsoil. About 1871 the Geological Survey made a point of mapping the "Surface Drifts," such as the gravels, brick-earth, and boulder-clay, beginning with those of the Midland Counties, so that the agriculturalists of several wide districts have since then had the opportunity of recognizing and studying the nature and origin of the surface soils in connexion with the notes and explanations frequently given in the 'Memoirs.' In fact, the Secretary of the Board of Agriculture, cognizant of the advantages of geology to the farmer, wishes to advance its publicity and causes copies of the Memoirs to be distributed to scientific centres for recognition and review.

A Treatise on Zoology. Edited by E. RAY LANKESTER, M.A., LL.D., F.R.S., &c.—Part I. *Introduction and Protozoa.* Second Fascicle. 1903. London: Adam and Charles Black.

It has been found necessary to publish Part I. of Prof. Lankester's 'Treatise on Zoology' in two fascicles, and of these the second forms the subject of the present notice. The decision of the editor not to delay the publication of this volume until the first was ready is undoubtedly, both in the interests of the student and the authors of the several sections, a wise one.

Anything like a complete account of the several contributions to this fascicle would be impossible in the space at our disposal. Four in number, they are the work of Messrs. Farmer, Lister, Minchin, and Hickson, whose names are a sufficient guarantee that the quality of the work is not only sound, but of the best that can be got.

Prof. Farmer contributes a section on Animal and Vegetable Cells, wherein he traces the history of the cell from the epoch-making discovery by Hooke in 1665 "of the chambered structure of